

DS449 - Safety Guide on “Format and Content of the Safety Analysis Report for NPPs”

Addressing comments by Review Committees; second review, after resolutions to MSS’ comments (*Deadline for comments: 16 /10 / 2017*)

Resolutions to comments (for meetings of November, 2017)

Comments received (2nd review):

Finland/STUK (6), China/CAEA (5), Iran/NRPD-INRA (6), Japan/NUSSC representative (7), Canada/Health (3), France/ASN/IRSN-NUSSC (64); Czech Rep/SUJB (11), UK/ONR (4), France-EPreSC/ASN (2)

After deadline: Korea/KINS (16; 1 week); Pakistan/PNRA (12; 2 weeks)

TABLE-1, Rev.2: 44 comments from 8 Members (below): changed resolutions to comments on Chapter 19

[TABLE-2: 64 comments from France/ASN/IRSN-NUSSC (separate table)]

[TABLE-3: 28 comments from Korea/KINS-NUSSC and Pakistan/PNRA (separate table)]

Rev.2: 8 November 2017

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TABLE-1: 44 comments from 8 Members							
SECTION 2. GENERAL CONSIDERATIONS							
Phase RCs UK-1	2.15 Line 6	“... The full impact of any modification on the safety of the nuclear power plant should be evaluated and where so required submitted to the regulatory body for approval before being implemented.”	In the UK, ONR does not necessarily approve all modifications.	X			
SECTION 3							
CHAPTER 1. INTRODUCTION AND GENERAL CONSIDERATIONS							
Phase RCs Canada-1	3.1.3 General Rev.1: It	<i>General comment to the para.:</i> 3.2.9. This section should also cover the public uses of the land and water resources in the surrounding area, and should include	Geography and demography should considered implications for the efficient implementation of protective		Rev.1: See resolution in para. 3.2.9		

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	<i>applies to para. 3.2.9, see below</i>	an assessment of any possible interaction with the plant <u>including implications for off-site protective actions in an emergency.</u> "	measures under various emergency scenarios				
CHAPTER 2. SITE CHARACTERISTICS							
Phase RCs China-1	3.2.4 Line 1-2	This chapter of the safety analysis report should provide information concerning the site evaluation as support for the design phase, design assessment phase and periodic safety review, <u>and comparison of the related information between the current phase and the last phase should be carried out to give a periodic conclusion of the changing trend of site condition.</u>	The requirements of data comparison between different phases should be clarified. And the information depth or analysis differences for different phases (like PSAR and FSAR) should also be clarified.		<i>This para will be modified as follows:</i> “... and periodic safety review, including considerations on potential changes of relevant site parameters expected over the time of the plant. This information ...”		
Phase RCs Japan-1	3.2.7.	3.2.7. This section should specify the site location, including both the area under the control of the applicant / licensee and the surrounding area in which ...	Clarification. The organization that submits safety analysis report is called “applicant” until a license would be issued.		“... both the area under the control of the operating organization licensee and the surrounding area in which...”		
Phase RCs Canada-1	3.1.3 General <i>Rev.1: It applies to para. 3.2.9, not to 3.1.3</i>	<i>General comment to the para.:</i> “This section should also cover the public uses of the land and water resources in the surrounding area, and should include an assessment of any possible interaction with the plant <u>including implications for off-site protective actions in an emergency.</u> ”	Geography and demography should be considered implications for the efficient implementation of protective measures under various emergency scenarios	X	<i>The para. 3.2.9 will be modified as follows:</i> “... interaction with the plant and the implications for off-site protective actions in an emergency ”		
Phase RCs Finland-2	3.2.23. End para.	...For both coastal and riverine flooding, reasonable combinations of hazards should be considered (e.g. tides and strong wind).	Add: <i>The impact of climate change should be considered as</i>		“...For both coastal and riverine flooding, reasonable		

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		<i>The impact of climate change <u>change</u> should be considered as relevant.</i>	<i>relevant.</i> Some of the phenomena that are expected due to the climate change are not obvious and the reminding of the issue would be useful. This implies also that the historical data is not sufficient. As an example in Finland the dominating factor of the rise of sea level at the Gulf of Finland is the melting of Antarctic.		combinations of hazards should be considered (e.g. tides and strong wind) and potential changes caused by climate change should be considered."		
Phase RCs Finland-1	3.2.27 Line 5	...snow loads, icing and pack ice..	Please add other "winter phenomena" than snow loads should be mentioned	X			
Phase RCs Japan-2	3.2.35	3.2.35. The feasibility of emergency preparedness in terms of plant accessibility and of transport in case of any equipment necessary for an emergency, including a severe accident, should be discussed in this section, taking into account all reactor units and other nuclear and non-nuclear installations on the given site, as applicable. Information provided should include availability of adequate access and egress roads for evacuation of personnel, including access to the site, and nearby population sheltering and supply networks in the vicinity of the site.	Clarification of the definition for a relation of transportation with an emergency response actions. Reason for the deletion is that activities for nearby population in the event of an emergency will be considered in off-site emergency response plan that will be developed not by operational organization, but by organization designated by national laws.	X			
Phase RCs Japan-3	3.2.36	3.2.36 The availability of local transport networks and communications networks during and after an external event and for	To keep consistency with the description of the draft DS484 as revision of NS-R-3 (Rev. 1).	X			

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		the implementation of a suitable emergency plan <u>the feasibility of planning to implement emergency response actions</u> should be described. It should be ensured that the requirements for adequate infrastructures external to the site are met.					
Phase RCs Japan-4	3.2.37	3.2.37 The needs for any necessary administrative measures should be identified, together with the relevant responsibilities <u>roles</u> of bodies and response organizations other than the operating organization.	Better wording. The relevant responsibility in performing administrative measures may be identified in off-site emergency plans, which will be developed by the organization other than the operating organization, after the role of each organization involved is coordinated. In the stage of preparing SAR, it will be enough to identify the roles of each organization involved in administrative measures.	X			
Chapter 3: Safety objectives and design rules of structures, systems and components							
Phase RCs Iran-1	3.3.11 First line	"This section should describe the measures taken to prevent and to mitigate nuclear or radiation <u>radiological</u> accidents..."	According to IAEA Safety Glossary: Radiation Emergency is Nuclear or Radiological Emergency. Radiation is general word for "nuclear or radiological".	X			
Phase RCs Finland-3	3.3.53.	3.3.53. This section should describe the protection against internal missiles. The design requirements, the loads and their implications, <u>off-site protective actions and the required human interactions should be specified and described with the</u>	Please clarify: The protection against internal missiles is normally made using passive structures. What is the intention of these		<i>This para. will be modified as follows:</i> "... The design requirements, the loads and their implications, off site		

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		<u>justification of the successful protection.</u> This includes the identification of all potential missile generating events, the parameters of generated missiles, including turbine missiles and any other missiles either inside or outside the containment. The design measures for ensuring the required safety level and compliance with the requirements should be presented in Chapters 4-12.	off-site actions requested?		protective actions and the required human interactions should be specified and described with the justification of the successful protection. This includes ...”		
Phase RCs Finland-4	3.3.54.	This section should describe the protection against high energy line breaks. The design requirements, the loads and their implications, <u>off-site protective actions and the required human interactions should be specified and described with the justification of the successful protection.</u> This includes the identification of all postulated failures of high energy pipelines and the dynamic effects of the pipe break and the SSCs potentially affected. The design measures for ensuring the required safety level and compliance with the requirements should be presented in Chapters 4-12.	Please clarify: The protection against High energy line breaks is normally made using passive structures. What is the intention of these off-site actions requested?		<i>This para. will be modified as follows:</i> “... The design requirements, the loads and their implications, off-site protective actions and the required human interactions should be specified ...”		
CHAPTER 8. ELECTRIC POWER							
Phase RCs Japan-5	3.8.13. (c)	(c) In accident conditions with a subsequent loss of off-site power, the required safety loads can be sequenced onto the standby AC power source in case of design basis accidents without	Duplication of plant state makes confusion. “In accident conditions with a subsequent loss of off-site power” differs from “in case of		(c) In design basis accidents accident conditions with a subsequent loss of off-site power, the		

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		overloading the primary mover and in time frames consistent with the assumptions presented in the chapter 15 on safety analyses;	design basis accidents”.		required safety loads can be sequenced onto the standby AC power source, in case of design basis accidents without overloading the primary mover and in time frames ...”		
Phase RCs Japan-6	3.8.13. (d)	(d) Uninterruptible AC power is continuously provided to essential safety systems and important to safety instrumentation and control systems while normal off-site AC power systems are available and during postulated loss of off-site power events <u>irrespective the availability of off-site AC power;</u>	Better wording for clarification of the condition of off-site AC power systems. Uninterruptible AC power must be secured at any time.		(d) Uninterruptible AC power is continuously provided to essential safety systems and instrumentation and control systems important to safety, irrespective the availability of off-site AC power instrumentation and control systems while normal off-site AC power systems are available and during postulated loss of off-site power events; <u>irrespective the availability of off-site AC power</u>		
CHAPTER 11. RADIOACTIVE WASTE MANAGEMENT							
Phase RCs Czech Republ-1	3.11.2 Item 1	1. The capabilities of the plant to minimize, control, collect, handle, process and store <u>for pretreatment, treatment, conditioning and storage of</u> liquid, gaseous, and solid radioactive waste; and	Terminology is not in compliance with the IAEA Safety Glossary, 2007 and safety standards on RAW management. Either use general term “management of	X	<i>This resolution has been applied also to 3.11.4, 3.11.10 (see comment Czech Rep-1bis), 3.11.14 and 3.11.16]</i>		

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			RAW”, which covers also disposal not performed at NPPs or proposed, more precise, wording.				
Phase RCs Czech Republ-2	3.11.2 Line 6	“... facility (final repository disposal facility) and is therefore ...”	Terminology is not in compliance with the IAEA Safety Glossary, 2007 and safety standards on RAW management. Disposal of RAW is always a final step in RAW management.	X			
Phase RCs Czech Republ-3	3.11.2 Line 7	“... However, waste acceptance criteria for repositories, ...”	Terminology is not in compliance with the IAEA Safety Glossary, 2007 and safety standards on RAW management.	X	“... However, any waste acceptance criteria for ...”		
Phase RCs Czech Republ-4	3.11.29 Line 3	“... Measures should also be aimed at minimizing both the volume and the activity of the waste in such a way as to meet any specific requirements, such as waste acceptance criteria, that may be posed by the design of the waste storage and disposal facility.”	Interdependencies to disposal facilities (available or planned) have to be considered as well		“... These measures are required to should also be aimed at minimize minimizing both the volume and the activity of the waste (see para. 4.8 of SSR-2/1 (Rev. 1) [3]), and should be implemented in such a way so as to meet any specific criteria requirements, such as waste acceptance criteria, that are may be posed by associated with the design of the		

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					waste storage and disposal facility.”		
Phase RCs Czech Republ-1 bis	3.11.10	3.11.10 This section should describe the capabilities of the plant to control, collect, process, handle and store for pretreatment, treatment, conditioning and storage of liquid radioactive waste ...”	Terminology is not in compliance with the IAEA Safety Glossary, 2007 and safety standards on RAW management. Either use general term “management of RAW”, which covers also disposal not performed at NPPs or proposed, more precise, wording.	X	<i>See resolution to Czech Rep-1 about 3.11.2</i>		
Phase RCs Czech Republ-5	3.11.11 Bullet 3	“... taking into account the interdependences among all steps in the predisposal management of radioactive waste, as well as the impact of including the anticipated disposal option. In .. “	Interdependencies cover also the disposal of RAW performed “outside” the NPP.	X	“... established procedures, <u>with account taken of taking into account</u> the interdependences among all steps in the predisposal management of radioactive waste, as well as the impact of including the anticipated disposal option....”		
Phase RCs Czech Republ-6	3.11.16 (+ the rest of the text)	... temporarily store ... intermediate store...	Storage is always a temporary or intermediate option.	X			
Phase RCs Czech Republ-7	3.11.17	... long term storage	To avoid discussion on the length of the “long term storage” considering that storage is always limited in time, it is proposed to use the term storage without any adjective.	X	<i>Also applied to 3.11.11 (d)</i>		

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CHAPTER 12. RADIATION PROTECTION							
Phase RCs Iran-2	3.12.14 First line [Corrected in Rev.1]	The meaning of this sentence is not clear: "The principles of radiation Protections applied in the design should be described..."	The three general principles of radiation protection, which concern justification, optimization of protection and application of dose limits, according to Requirement 1 of GSR Part 3, shall be applied.		3.12.14. This section should describe how the principles of radiation protection are applied in the design taking into account the Requirement 1 from GSR Part 3 [37] should be described, including a description of the means implemented to ensure that: (...)"		
Phase RCs Iran-3	3.12.14 Item (e)	"All practicable steps are taken to prevent mitigate exposure due to accidents with radiological consequences, including analysis of potential accidents and response with countermeasures;"	In SSR-2/1, "preventing accidents" is used several times but for exposure "mitigate" or minimize" are used (Requirement 5). According to paragraph 3.12.2 of this draft: " Potential radiation exposures of workers in the nuclear power plant under accident conditions, including those with core melting, should be addressed and the means and other measures taken to minimize the exposure described."		<i>Bullet (e) will be modified as follows:</i> (e) All practicable steps are taken to prevent avoid or minimize exposures due to accidents with radiological consequences, including analysis of potential accidents and response with countermeasures;"		
CHAPTER 14. PLANT CONSTRUCTION AND COMMISSIONING							
Phase RCs	3.14.6	"... The process established for the licensee	The IAEA glossary defines		"... The process		

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UK-2	Line 2	to develop and approve its own test procedures, to control test performance and to review and approve test...	approval as regulatory approval. I am assuming here you really mean approval by the licensee's management, hence the clarification. Please see text of comment number 1 if you really do mean regulatory approval as in the UK, ONR does not approve		established for the licensee to develop and approve test procedures, to control test performance and to review and approve test...		
Phase RCs UK-3	3.14.8 Bullet 3 and Bullet 5	<i>Bullet 3:</i> “... and approve individual commissioning procedures by the licensee , including the organizational units... <i>Bullet 5:</i> ..and approval by the licensee of commissioning....	See above comments. In the UK, ONR does not approve commissioning procedures.	X			
CHAPTER 15. SAFETY ANALYSIS							
Phase RCs Czech Republ-8	3.15.35 Line 2	“... Analyses of events associated with spent fuel pools and radioactive waste processing management systems...	See comment No. 1	X			
CHAPTER 18.: HUMAN FACTORS ENGINEERING							
Phase RCs UK-4	3.18.35 Bullet 2	“... to the licensees approved design;”	See above comments. In the UK we do not approve designs, only activities on site.		“...training conform to the approved - design intent ;”		<i>Final/ detail design might be slightly different than the one somehow accepted by licensee/regulator</i>
CHAPTER 19. EMERGENCY PREPAREDNESS							
NOTE: The wording of all the Chapter 19 will be entirely revised looking for further alignment with the one used in GSR Part 7, in accordance with the result of the discussions held during the Meeting of EPreSC-5 (8 November 2017).The comments/resolutions below will be no longer applicable							

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Phase RCs Iran 4	3.19.1. Line 2	"...reasonable manner that, in <i>case of an</i> accident emergency (or incident) ..."	In some cases, a nuclear security event is likely to be a nuclear or radiological emergency which is very important from safety aspects. The definition of "accident" covers "any unintended event" not nuclear security event. So it is suggested to replace accident with "emergency".		" ... demonstrating in a reasonable manner that, in the event of an accident a nuclear or radiological emergency , all actions necessary ... " <i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs China-2 (marked as nr 5)	3.19.1. Line 2	" ... for the protection of the workers, public, and the plant environment could be taken, ..."	The principle objective of emergency preparedness is to protect people and environment, to emphasize protection of plant could affect decision making process.	X	<i>(See Iran-5)</i> " ... for the protection of the workers public, the workers, and the plant environment could be taken, ..." <i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs Iran-5	3.19.1. Line 2	"... for the protection of the public, workers, and the plant and environment could be taken..."	According to SSR-2/1		<i>See resolution to China-2, above</i> <i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs France1-1	3.19.6. Line 5 Bullet 1	Activating the Response organization <i>(instead of "Establishing emergency management)</i>	Establishing of an emergency management should be done at the preparedness stage	X	" Activating the response organizations Establishing emergency management " <i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs	3.19.6.		Please delete potential.	X	"Identifying		

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Finland-5	Bullet 3	Identifying potential interface with security measures;	The interface between emergency arrangements and security measures is obvious.		potential the interface ... “ (Note 8/12/2017: See the note in the title of Chapter 19, above)		
Phase RCs France1-2	3.19.6. Line 9 Bullet 5	Delete “Activating the response”	To be consistent with comment n° 1 (France1-1)	X	(Note 8/12/2017: See the note in the title of Chapter 19, above)		
Phase RCs China-3 (marked as nr 6)	3.19.6. Line 13 Bullet 8	Protecting emergency workers, helpers <u>and public</u> ;	Public is also need to be included	X	“Protecting emergency workers, and helpers and the public .” (Note 8/12/2017: See the note in the title of Chapter 19, above)		
Phase RCs China-4 (marked as nr 7)	3.19.6. Line 19 Last bullet	<u>Proposing the termination of on-site emergency.</u>	The operating organization have the duty to propose the termination of on-site emergency.		(Note 8/12/2017: See the note in the title of Chapter 19, above)	X	Last bullet refers to the “measures” for terminating the emergency
Phase RCs Iran-6	3.19.6. After last bullet	It is suggested to add this item to the list: “Communicating with off-site officials responsible for taking protective actions and other response actions off the site or within any emergency planning zones or emergency planning distances, under the full range of emergency conditions.”	One of the items in the list is : “Notifying off-site officials” which is too specific. Communicating with off-site is under Requirement 9 of GSR Part 7: “Taking urgent protective actions and other response actions”		(Note 8/12/2017: See the note in the title of Chapter 19, above)	X	Such bullet would be too detailed for the list of items. Communicating and exchange of information might be part of another document.
Phase RCs Canada-2	3.19.6. general	Revise the bullet points to align with the requirements of GSR part 7	The current bullet points are not fully aligned with GSR part 7 requirements		See resolutions above. (Note 8/12/2017: See the note in the title of Chapter 19, above)	X	No specific changes are proposed. GSR Part 7 addresses emergency preparedness and response for all the organizations involved. The description in the

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							<i>SAR includes the roles of the operating organization; in this para. the arrangements and measures (responsibilities and necessary actions).</i>
Phase RCs China-5 (marked as nr 8)	3.19.8. Line 10 <i>Bullet (c)</i>	“(c) An off-site emergency facility in which response personnel will assess information gained from on-site measurements and off-site monitoring data , provide advice ...”.	Response personnel in the off-site emergency facility will also assess information gained from off-site monitoring data.	X	<i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs Canada-3	3.19.8. Item (d)	(d) Off-site monitoring systems for passing data and information to the regulatory body and off-site emergency response authorities , if appropriate or if required by national arrangements	To facilitate timely response and protective action decisions, off-site emergency response authorities should also have access to this data and information, not just the regulatory body.		<i>Bullet (d) will be modified as follows:</i> (d) Off-site monitoring systems for passing providing data and information to the operating organization and to the regulatory body, if as appropriate, or if required by national arrangements. <i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		
Phase RCs Finland-6	3.19.12 <i>Last bullet</i>	Describe how emergency arrangements, including potential interface with security measures, are integrated and coordinated with emergency arrangements of adjacent sites.	Please delete potential. The interface between emergency arrangements and security measures is obvious.	X	<i>(Note 8/12/2017: See the note in the title of Chapter 19, above)</i>		

CHAPTER 21. DECOMMISSIONING AND END OF LIFE ASPECTS

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Phase RCs Czech Republ-9	3.21.5 Line 2	“... The main differences between the alternative approaches decommissioning options should be explained...”	There are three basic decommissioning options – immediate dismantling, deferred dismantling and, only in specific cases, entombment. No “alternatives” to these options are considered in the IAEA Safety Standards.		“ ... The main differences between the alternative approaches decommissioning options should be explained (e.g. in terms of the optimization of protection and safety, the protection of minimization of the radiological consequences for personnel, the public and the environment, and optimization minimizing the generation of waste, and well as of the technological, economic, social and other relevant indicatorsfactors). Options and ...”		
Phase RCs Czech Republ-10	3.21.7 (d)	(d) Identification of the already available SSCs and other systems, tools and equipment required during ...”	For clarification – not only new, but also available SSCs can be used for decommissioning activities.		(d) Identification of the systems, tools and equipment required during decommissioning, including those already available , and organization of the decommissioning actions; ”		

